Water Conservation Plan

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Prepared for:

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1.0 Introduction

1.1 Utah's Water Conservation Goals

The Utah Division of Water Resources (DWRe) currently leads statewide efforts for municipal and industrial water conservation. Utah's previous statewide goal for water conservation was to achieve 25% water conservation from 2000 to 2025. Since significant progress has been made toward that goal, DWRe has identified the need for regional conservation goals based on the various climates, populations, and water use practices in different parts of the state. DWRe's draft Utah's Regional M&I Water Conservation Goals updated Utah County's conservation goal to 20% from 2015 to 2030, which equates to an average use of 179 gallons per capita per day (gpcd).

One step to facilitate water conservation efforts is for municipalities to implement water conservation plans. Because the Town of Genola's culinary water system has less than 500 connections, the town has not been not required to develop a water conservation plan. This document serves as an initial conservation plan for the Town of Genola.

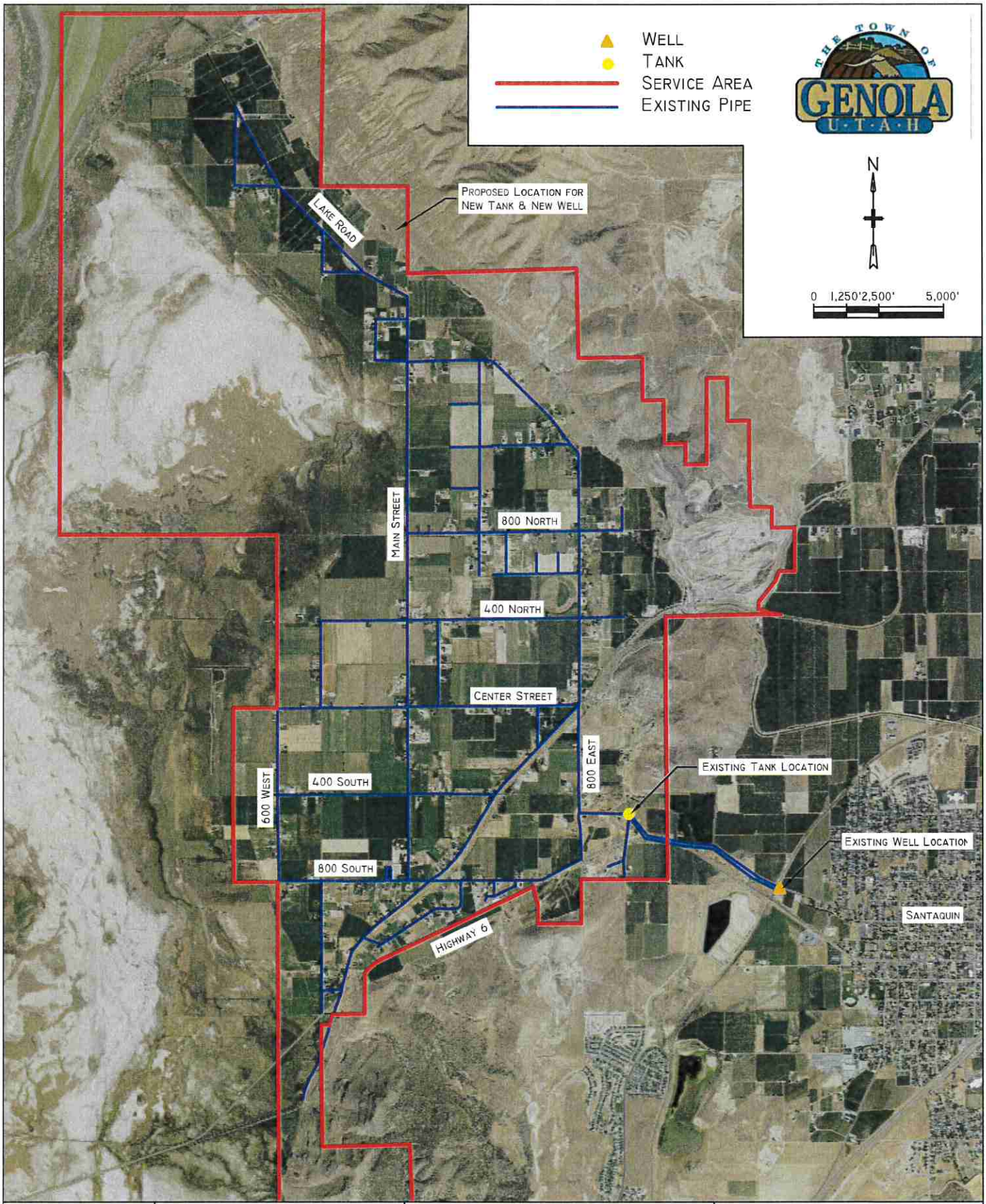
1.2 Background Information

The Town of Genola (further referred to as Genola), located in southern Utah County, is a rural community with a land area of approximately 13.9 square miles. Land use in Genola is predominantly agricultural. According to the 2010 U.S. Census, Genola had 1,370 citizens.

In 1935, Genola began the planning and design of a municipal culinary system. The system was completed in May 1938 and water entered the system in 1939. Also, in the 1930s, Genola entered into an agreement with Santaquin City to trade irrigation water for culinary water. The Santaquin connection provides Genola a constant flow of 100 gallons per minute (gpm). In 1962, Genola installed a well with a 285-gpm capacity east of the Union Pacific Railroad. In May 1980, town council members voted to construct a steel storage tank with a 500,000-gallon capacity. Genola's well was later upsized to increase its capacity to 750 gpm. The current culinary water service area and system layout are shown in Figure 1-1.

As the state of Utah has continued to grow, Genola has become increasingly concerned with providing reliable culinary water to its residents. As a result, Genola adopted a master plan, created by JUB Engineers, Inc, in order to analyze the culinary water system and to identify improvements that may be made to anticipate the continual growth of Genola.

Genola's town council, in conjunction with the public works director, has overseen the development of this water conservation plan, with assistance from Franson Civil Engineers.



FRANSON CIVIL ENGINEERS

DATE:	NOVEMBER 13, 2019
SCALE:	
Service Area.dwg P:\UT\Central\Genola Tank and Well\Drawings	

FIGURE 1-1

CULINARY WATER SERVICE AREA

2.0 Existing Water Resources

2.1 Existing Water Rights and Sources

Genola has two existing water rights with a point of diversion at the Town well, known as Well #1. The well is located near the intersection of Lark Road and 6200 West in Santaquin, Utah. Table 2-1 displays a summary of Genola's water rights.

Table 2-1 Genola Town Water Rights

Water Right	Source	Flow
53-1081	Underground Water Well	0.200 cfs
53-1082	Underground Water Well	3.826 cfs

Genola currently obtains water from its well and a connection to Santaquin's culinary system, which provides a constant flow of approximately 100 gpm or 0.22 cubic feet per second (cfs). Genola's two sources can be used year-round. Table 2-2 summarizes the capacities of the town's current sources.

Table 2-2 Source Capacities

Source	Source Capacity (gpm)	Daily Volume (gpd)	Annual Volume (MG)	Annual Volume (AF)
Well #1	750	1,080,000	394	1,209
Santaquin Connection	100	144,000	53	163
Total	**850**	**1,224,000**	**447**	**1,372**

2.2 Existing Infrastructure

Sources

As previously discussed, Genola has two sources for their culinary system: Well #1 with a capacity of 750 gpm and the connection with Santaquin that provides a constant 100 gpm.

Treatment Facilities

Since Well #1 is classified as groundwater by the Utah Division of Drinking Water (DDW), it is not required to be disinfected by Genola. The water received by Santaquin is disinfected with chlorine.

Storage

Genola currently has one steel tank used for culinary water storage. The capacity of the tank is 500,000 gallons. There is an older tank adjacent to the steel tank, but it has been abandoned.

Transmission/Distribution System

The culinary water distribution system consists of approximately 30 miles of pipeline with necessary pipe fittings, valves, residential meters, and other related items. For a detailed list of pipe type and diameter, please refer to Genola's 2017 Culinary Water System Master Plan.

2.3 Culinary Water Connections

In 2018, Genola reported the following culinary water connections: 416 residential/ domestic, 18 commercial, 3 industrial, and 2 institutional. Genola's previous ten years of data for their culinary water connections can be found in Table 2-3.

Table 2-3. Historical Number of Connections Categorized by Type

Year	Residential/ Domestic	Commercial	Industrial	Institutional	Total
2018	416	18	3	2	**439**
2017	400	17	3	2	**422**
2016	395	8	0	2	**405**
2015	397	8	0	2	**407**
2014	394	0	0	0	**394**
2013	350	0	0	0	**350**
2012	365	0	0	0	**365**
2011	400	0	0	0	**400**
2010	400	0	0	0	**400**
2009	390	0	0	0	**390**
2008	NA	NA	NA	NA	**NA**

3.0 Current and Future Water Use

3.1 Current Water Use

Culinary Water System

In 2018, Genola diverted 337.1 acre-feet (AF) from their two sources; Well #1 and the Santaquin Connection. Records for water diverted from Genola's sources can be found in Table 3-1.

Table 3-1 Historical Source Water Diverted in AF

Year	Well #1	Santaquin Connection	Total
2018	175.2	161.9	**337.1**
2017	172	161.9	**333.9**
2016	150.8	161.9	**312.7**
2015	128.4	160.8	**289.2**
2014	124.9	161.5	**286.4**
2013	103.2	160.8	**264**
2012	114.8	161.6	**276.4**
2011	64.1	161.3	**225.4**
2010	74	161.5	**235.5**
2009	79.6	15.6*	**95.2**
2008	117	161.3	**278.3**
2007	137.5	161.3	**298.8**
2006	78.6	161.3	**239.9**
2005	110.1	161.3	**271.4**

*This value may be a reporting error since the supply from the Santaquin connection is consistently about 161 acre-feet.

In 2018, Genola's total culinary water usage was 238.88 AF. Additional water usage records for Genola's culinary water connections can be found in Table 3-2. The Genola system consists of residential, commercial, industrial, and institutional culinary connections (there are no stock, other, or unmetered connections reported). These records are representative of end use data that has been previously submitted to Water Rights. Note that data was either not submitted or unavailable for the years 2006 through 2008.

Table 3-2 Historical Water Use in AF Categorized by Type of Connection

Year	Residential/ Domestic	Commercial	Industrial	Institutional	Total
2018	197.38	21.75	16.30	3.45	**238.88**
2017	187.15	17.01	17.35	3.69	**225.2**
2016	171.86	59.81	0	6.07	**237.74**
2015	199.48	56.74	0	5.46	**261.68**
2014	253.78	0	0	0	**253.78**
2013	264.64	0	0	0	**264.64**
2012	276.13	0	0	0	**276.13**
2011	255.35	0	0	0	**255.35**
2010	235.46	0	0	0	**235.46**
2009	240.92	0	0	0	**240.92**
2008	NA	NA	NA	NA	**NA**
2007	NA	NA	NA	NA	**NA**
2006	NA	NA	NA	NA	**NA**
2005	271.55	0	0	0	**271.55**

Irrigation Water

Genola residents receive irrigation water from the Strawberry High Line Canal Company (SHLCC). The irrigation water is largely used for agricultural purposes throughout Genola's service area as most residential parcels consist of 5 acres of agricultural land and 0.25 acre for a house and landscaping. Most residents use their SHLCC shares to water lawns and gardens in addition to their agricultural property. As a result, very little water from Genola's culinary system is used for outdoor watering. It is assumed that there may be a small number of residents who choose to irrigate lawns and gardens from their culinary connections. Genola, however, does not measure this usage separately and does not have the data to estimate the quantity.

Per Capita Water Use

Table 3-3 and Figure 3-1 represent the calculated gallons per capita per day (gpcd) for Genola. The total community culinary per capita water use in 2018 was 148 gpcd, and the average since 2010 has been 160 gpcd.

Table 3-3 Water Use Per Capita

Year	Population	Residential Use (AF)	Non-Residential Use (AF)	Total Use (AF)	Total Use (gpd)	Total Community Use Per Capita (gpcd)	Total Residential Use Per Capita (gpcd)
2018	**1440**	**197.38**	**41.50**	**238.88**	**213,259**	**148**	**122**
2017	1470	187.15	38.05	225.20	201,046	137	114
2016	1440	171.86	65.88	237.74	212,241	147	107
2015	1500	199.48	62.20	261.68	233,613	156	119
2014	1350	253.78	0	253.78	226,560	168	168
2013	1300	264.64	0	264.64	236,256	182	182
2012	1350	276.13	0	276.13	246,513	183	183
2011	1300	225.35	0	225.35	201,180	155	155
2010	1300	235.46	0	235.46	210,205	162	162
2009	1300	240.92	0	240.92	215,080	165	165
2008	1300	NA	NA	NA	NA	NA	NA
2007	1350	NA	NA	NA	NA	NA	NA
2006	1290	NA	NA	NA	NA	NA	NA
2005	1200	271.55	0	271.55	242,425	202	202
Average						**164**	**152**

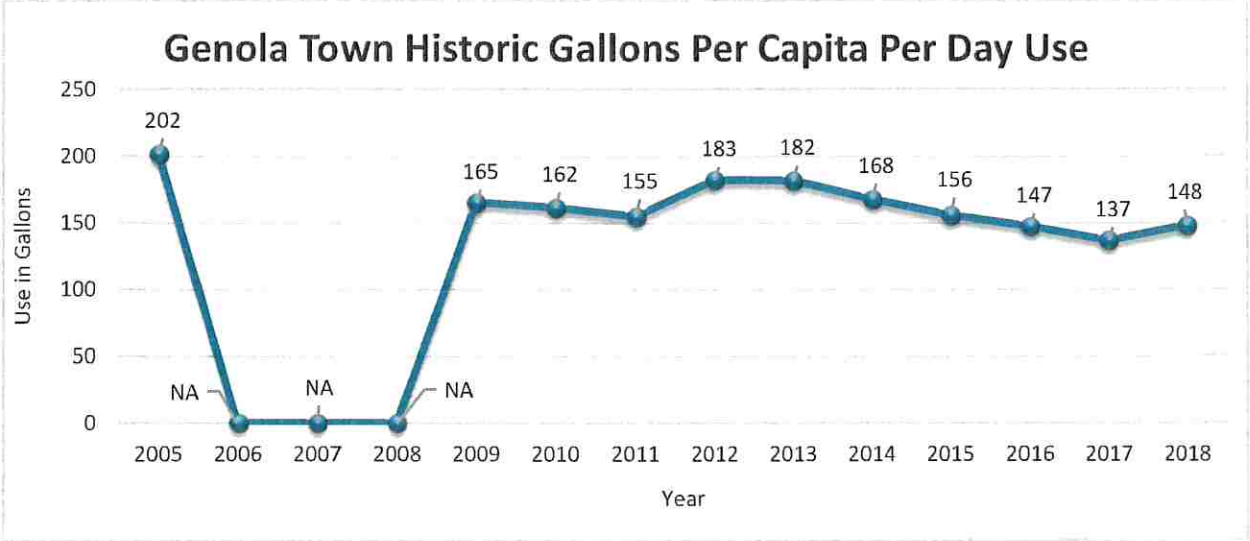


Figure 3-1 Water Use Per Capita

3.2 Determination of Future Requirements

Genola's population has been growing slowly at a steady rate for the past decade. Table 3-4 shows the population projections for Genola in 10-year increments. In order to project an annual water demand for the coming years, Genola's average per capita water use from the last 10 years of 160 gpcd was used. The projected water demands are also displayed in Table 3-4.

Table 3-4 Projected Population and Water Use Per Capita

Year	Population	Projected Water Use based on 160 gpcd (AF)
2018	1,440	258
2020	1,650	296
2030	2,665	478
2040	4,300	771
2050	6,300	1,129

As previously described in Table 2-2, Genola has two sources of water with capacities of 750 gpm and 100 gpm. This equates to a total, reliable supply of 1,372 AF of water per year. Therefore, Genola has a sufficiently reliable supply in order to meet the projected demand of 1,129 AF of water in 2050, as shown in Figure 3-2. Note that Figure 3-2 also depicts the projected water demand, assuming 10% water conservation (144 gpcd).

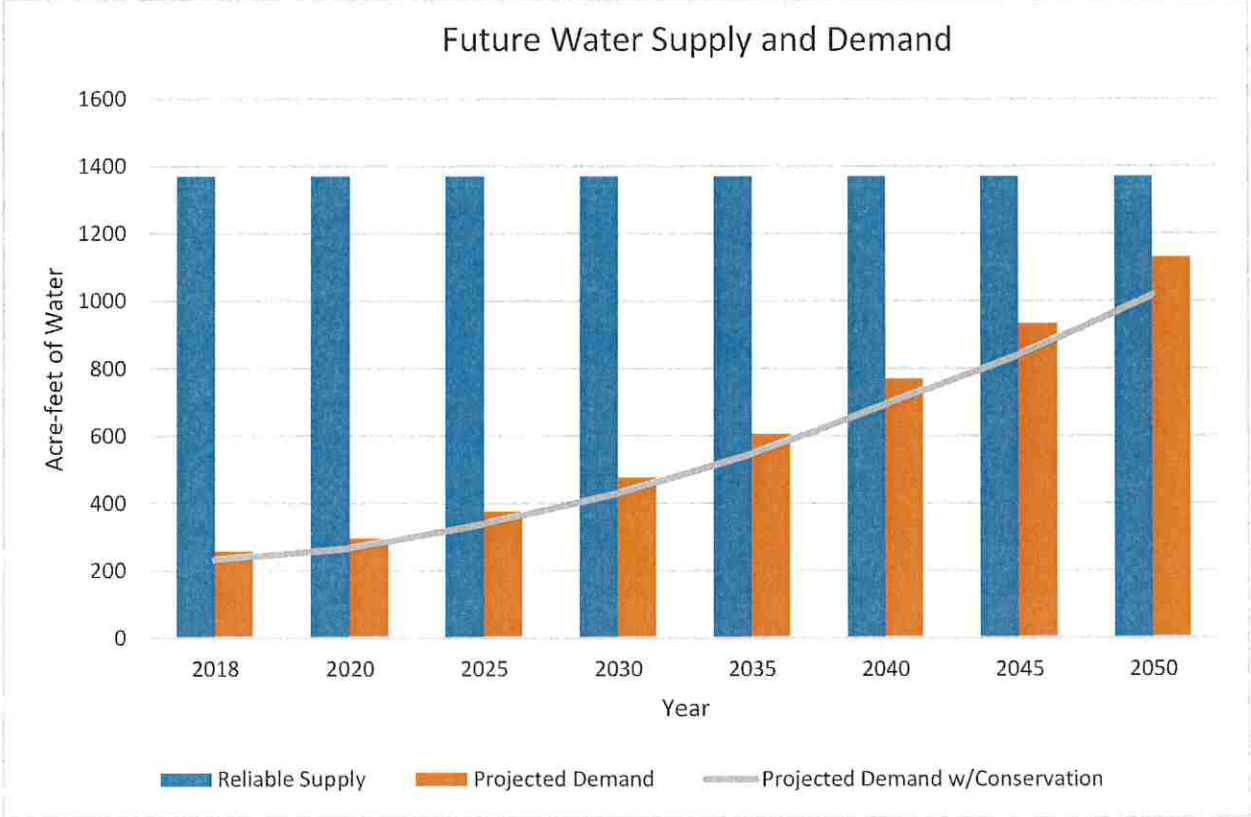


Figure 3-2. Project Water Supply and Demand

As previously mentioned, DWRe has established a draft goal of 179 gpcd by 2030 for Utah County. Genola's recent 10-year average of 160 gpcd is less than the state goal. However, the state goal includes outdoor watering and Genola's data does not. The state goal represents a reduction of 20% system-wide including both indoor and outdoor use. Since Genola does not have data for their irrigation water use, they revised the water conservation goal to be 144 gpcd by 2030 (10% water conservation from their average 160 gpcd).

Although Genola already has a sufficent water supply up to the year 2050, it was determined in Genola's master plan that an additional well and storage tank would be needed for redundancy purposes. As a result, Genola has plans to incoporate a new 750 gpm capacity well (which will be known as Well #2) and a new 1.0-million-gallon (MG) concrete storage tank. The master plan estimates that the well will cost $1,579,000 and the storage tank will cost $1,933,000. For other future water projects, such as pipelines, please refer to Genola's 2017 Culinary Water System Master Plan.

4.0 Water Measurement and Billing

4.1 Water Measurement Practices

100% of Genola's culinary water connections are metered, and they are read on a monthly basis. The town does not currently meter the water used to irrigate the town parks and cemetery.

There are two Master Meters used for Genola's source metering, and they are also read monthly. Currently, there is no calibration schedule for the source meters.

4.2 System Water Loss Control

Between 2008 and 2016, Genola's water system experienced approximately 9.6% of unaccounted-for water. Potential reasons for unaccounted-for water may vary, including leaks from various infrastructure (pipes, valves, hydrants, etc.), water theft, and water meter inaccuracies. When a source for water loss is made known, Genola makes appropriate actions to correct the problem. In 2017 and 2018, the unaccounted-for water was higher than it had been during the previous nine years. Efforts will be made to determine the cause of the discrepancy.

4.3 Culinary Water Rate Structure

Genola's current culinary water rate structure is shown in Table 4-1. These rates may be reevaluated by the town council and compared to a tiered water rate structure. The water rates may also need to be adjusted to cover costs for the new well and storage tank.

Table 4-1 Culinary Water Rate Structure

Monthly Base Charge per Size of Meter	
¾-inch meter	$19.08
1-inch meter	$22.89
1 ½-inch meter	$25.06
2-inch meter	$28.23
3-inch meter	$45.78
Usage Charge	
Charge per 1,000 Gallons	$1.49

5.0 Conservation Practices

With this document being Genola's first water conservation plan, the conservation practices described in this section will serve as initial fundamental steps toward improved water conservation. Genola's water conservations practices and goals focus on the following areas:

- Public education pertaining to the need to conserve water
- Financial management to properly operate and maintain water systems
- Water management from both a supply and water accounting viewpoint
- Age of current water system infrastructure

The water conservations practices described in this section will continue to be implemented within Genola. When the water conservation plan is updated, Genola may consider the implementation of additional water conservation practices.

Genola's committee for water conservation consists of the following:

- Mayor
- Public Works Director
- Town Clerk

5.1 Public Awareness

Proposed

Develop or utilize existing water conservation messaging.

Genola will utilize messaging from Slow the Flow and other educational materials and resources on the town's website, in water bills, and included in its newsletters. Genola will evaluate the guidelines for water conservation currently available at *www.conservewater.utah.gov* and incorporate the information as appropriate.

5.2 Education and Training

Proposed

Provide or support youth education programs for elementary school students.

Genola will contact Goshen Elementary School in order to seek the best methods to provide water conservation material and to support youth education programs.

5.3 Outreach Services

There are no ongoing or proposed outreach services for water conservation at this time.

5.4 Rebates, Incentives, and Rewards

Ongoing

Promote rebates offered in your service area.

Genola currently promotes rebates offered within their service area as they become available.

5.5 Ordinances and Standards

There are no ongoing or proposed ordinances or standards for water conservation at this time.

5.6 Water Pricing

Proposed

Consider tiered water rate structure.

Genola currently has a single-tiered usage rate of $1.49 per 1,000 gallons. Utah Senate Bill 28 requires retail water providers (an entity which supplies culinary water to end users and has more than 500 service connections) to establish a tiered billing structure. Although Genola serves less than 500 connections, Genola will consider analyzing a new billing structure that "incorporates increasing block units of water used; and provides for an increase in the rate charged for additional block units of water used as usage increases from one block unit to the next."

Notify customers of high water use.

Genola will consider options for sending notifications for high water use to their customers.

5.7 Physical System

Ongoing

Meter all connections, implement repair and replacement program, read meters on a regular basis.

Genola currently meters all connections within their culinary system, and the meters are read on a regular basis. Genola also has a repair and replacement program for their meters.

Certification of Adoption

I, Marty Larson, the presiding officer and Mayor of the Town of Genola, hereby certify that the attached Water Conservation Plan has been established and adopted by our town council members on Wednesday, January 8, 2020.

Martin Larson
Marty Larson, Mayor

1/16/2020
Date